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In re Patent Application of

Date: May 15, 2008

Applicants: Bednorz et al.

Docket: YO987-074BZ

Serial No.: 08/479,810

Group Art Unit: 1751

Filed: June 7, 1995

Examiner: M. Kopec

For: NEW SUPERCONDUCTIVE COMPOUNDS HAVING HIGH TRANSITION
TEMPERATURE, METHODS FOR THEIR USE AND PREPARATION

Commissioner for Patents
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CORRECTED APPEAL BRIEF

Part VII

CFR 37 §41.37(c)(1)(vii)

VOLUME 3

Part 3

Argument For the Patentability of Each Rejected Claims 323-329

Respectfully submitted,

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CLAIM 323/86

CLAIM 323/86 recites:

CLAIM 86 An apparatus comprising:

a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting onset temperature greater than or equal to 26°K,

a temperature controller for maintaining said composition to said superconducting state at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

a current source for passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 86 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/87

CLAIM 323/87 recites:

CLAIM 86 An apparatus comprising:

a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting onset temperature greater than or equal to 26°K,

a temperature controller for maintaining said composition to said superconducting state at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

a current source for passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 87 The apparatus of claim 86, where said transition metal is copper.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 87 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/144

CLAIM 323/144 recites:

CLAIM 144 An apparatus comprising:

a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 144 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/146

CLAIM 323/146 recites:

CLAIM 146 An apparatus:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a current source passing an electrical current through said composition while said composition is in said superconductive state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has

expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/147

CLAIM 323/147 recites:

CLAIM 146 An apparatus:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a current source passing an electrical current through said composition while said composition is in said superconductive state.

CLAIM 147 The apparatus of claim 146, where said composition is comprised of a metal oxide.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on

Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/163

CLAIM 323/163 recites:

CLAIM 163 An apparatus comprising:

a composition comprising copper, oxygen and any element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, where said composition is a mixed copper oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner

has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/164

CLAIM 323/164 recites:

CLAIM 164 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a current source passing an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and an element selected from the group consisting of Group II A element, a rare earth element and a Group III B element.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on

Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/168

CLAIM 323/168 recites:

CLAIM 168 An apparatus comprising:

a composition including copper, oxygen and an element selected from the group consisting of at least one Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed copper oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 168 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/169

CLAIM 323/169 recites:

CLAIM 169 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a current source passing an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and at least one element selected from the group consisting of Group II A and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim169 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/173

CLAIM 323/173 recites:

CLAIM 173 An apparatus comprising:

a composition including a transition metal, oxygen and an element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed transitional metal oxide formed from said transition metal and said oxygen, said mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 173 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/174

CLAIM 323/174 recites:

CLAIM 174 An apparatus:

forming a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a current source passing an electrical current through said composition while said composition is in said superconductive state; and

said composition including a transitional metal oxide and at least one element selected from the group consisting of Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 174 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/178

CLAIM 323/178 recites:

CLAIM 178 An apparatus comprising:

a composition including copper, oxygen, a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed copper oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 178 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/182

CLAIM 323/182 recites:

CLAIM 182 An apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller maintaining said composition at said temperature to exhibit said superconductivity and a current source passing an electrical superconducting current through said composition with said phrase exhibiting said superconductivity.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the

Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/189

CLAIM 323/189 recites:

CLAIM 189 An apparatus comprising:

a composition of the formula $\text{BaLa}_{5-x}\text{Cu}_5\text{O}_5(3-y)$, wherein x is from about 0.75 to about 1 and y is the oxygen deficiency resulting from annealing said composition at temperatures from about 540°C to about 950°C and for times of about 15 minutes to about 12 hours, said composition having a metal oxide phase which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of said composition at a temperature less than said critical temperature to induce said superconducting state in said metal oxide phase; and

a current source passing an electrical current through said composition while said metal oxide phase is in said superconducting state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 189 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/196

CLAIM 323/196 recites:

CLAIM 196 An apparatus comprising:

a composition including a transition metal, a Group III B element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 196 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/197

CLAIM 323/197 recites:

CLAIM 196 An apparatus comprising:

a composition including a transition metal, a Group III B element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 197 The apparatus of claim 196, where said transition metal is copper.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 197 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/214

CLAIM 323/214 recites:

CLAIM 214 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the copper-oxide compound including a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_p=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_p=0$ of the superconductive composition;
and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182,

189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259,
260, 264, 265 or 273, wherein said composition can be
made according to known principles of ceramic science.

This claim should be allowed since claim 214 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/224

CLAIM 323/224 recites:

CLAIM 189 An apparatus comprising:

a composition of the formula $\text{BaLa}_{5-x}\text{Cu}_5\text{O}_5(3-y)$, wherein x is from about 0.75 to about 1 and y is the oxygen deficiency resulting from annealing said composition at temperatures from about 540°C to about 950°C and for times of about 15 minutes to about 12 hours, said composition having a metal oxide phase which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of said composition at a temperature less than said critical temperature to induce said superconducting state in said metal oxide phase; and

a current source passing an electrical current through said composition while said metal oxide phase is in said superconducting state.

CLAIM 224 An apparatus according to claim 189 wherein said composition comprises a substantially layered perovskite crystal structure.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259,

260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claims 189 and 224 are allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/235

CLAIM 323/235 recites:

CLAIM 235 An apparatus comprising:

a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 235 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner

has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/236

CLAIM 323/236 recites:

CLAIM 235 An apparatus comprising:

a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 236 An apparatus according to claim 235, where said transition metal is copper.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 236 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/237

CLAIM 323/237 recites:

CLAIM 237 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a source of an electrical current through said composition while said composition is in said superconductive state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the

Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/239

CLAIM 323/239 recites:

CLAIM 237 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a source of an electrical current through said composition while said composition is in said superconductive state.

CLAIM 238 An apparatus according to claim 237, where said composition is comprised of a metal oxide.

CLAIM 239 An apparatus according to claim 238, where said composition is comprised of a transition metal oxide.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner

has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/254

CLAIM 323/254 recites:

CLAIM 254 An apparatus comprising:

a composition including copper, oxygen and an element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, where said composition is a mixed copper oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on

Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/255

CLAIM 323/255 recites:

CLAIM 255 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a source of an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and an element selected from the group consisting of Group II A element, a rare earth element and a Group III B element.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner

has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/259

CLAIM 323/259 recites:

CLAIM 259 An apparatus comprising:

a composition including copper, oxygen and an element selected from the group consisting of at least one Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed copper oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 259 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/260

CLAIM 323/260 recites:

CLAIM 260 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a source of an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and at least one element selected from the group consisting of Group II A and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 260 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/264

CLAIM 323/264 recites:

CLAIMS 264 An apparatus comprising:

a composition including a transition metal, oxygen and an element selected from the group consisting of at least one Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed transitional metal oxide formed from said transition metal and said oxygen, said mixed transition metal oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition in said superconducting state.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 264 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner

has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/265

CLAIM 323/265 recites:

CLAIM 265 An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a source of an electrical current through said composition while said composition is in said superconductive state; and

said composition including a transitional metal oxide and at least one element selected from the group consisting of Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 265 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 323/273

CLAIM 323/273 recites:

CLAIM 273 An apparatus comprising a composition comprising a transition temperature greater than or equal to 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at said temperature to exhibit said superconductivity and a source of an electrical superconducting current through said composition with said phrase exhibiting said superconductivity.

CLAIM 323 An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the

Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 324/91

CLAIM 324/91 recites:

CLAIM 91 A combination, comprising:

a composition exhibiting the onset of a DC substantially zero resistance state at an onset temperature in excess of 30°K,
and

means for passing an electrical current through said composition while it is in said substantially zero resistance state.

CLAIM 324 A combination according to anyone of claims 91, 92 or 36 to 39, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner

has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 324/92

CLAIM 324/92 recites:

CLAIM 91 A combination, comprising:

a composition exhibiting the onset of a DC substantially zero resistance state at an onset temperature in excess of 30°K,
and

means for passing an electrical current through said composition while it is in said substantially zero resistance state.

CLAIM 92 The combination of claim 91, where said composition is a copper oxide.

CLAIM 324 A combination according to anyone of claims 91, 92 or 36 to 39, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole

1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 324/36

CLAIM 324/36 recites:

CLAIM 36 A combination comprising:

a composition having a superconducting onset temperature greater than or equal to 26°K, said composition being comprised of a substituted copper oxide exhibiting mixed valence states and at least one other element in its crystalline structure,

means for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

cooling means for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 324 A combination according to anyone of claims 91, 92 or 36 to 39, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 324/37

CLAIM 324/37 recites:

CLAIM 36 A combination comprising:

a composition having a superconducting onset temperature greater than or equal to 26°K, said composition being comprised of a substituted copper oxide exhibiting mixed valence states and at least one other element in its crystalline structure,

means for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

cooling means for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 37 The combination of claim 36, where said at least one other element is an alkaline earth element.

CLAIM 324 A combination according to anyone of claims 91, 92 or 36 to 39, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on

Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 324/38

CLAIM 324/38 recites:

CLAIM 36 A combination comprising:

a composition having a superconducting onset temperature greater than or equal to 26°K, said composition being comprised of a substituted copper oxide exhibiting mixed valence states and at least one other element in its crystalline structure,

means for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

cooling means for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 38 The combination of claim 36, where said at least one other element is an element which results in Cu³⁺ ions in said composition.

CLAIM 324 A combination according to anyone of claims 91, 92 or 36 to 39, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 324/39

CLAIM 324/39 recites:

CLAIM 36 A combination comprising:

a composition having a superconducting onset temperature greater than or equal to 26°K, said composition being comprised of a substituted copper oxide exhibiting mixed valence states and at least one other element in its crystalline structure,

means for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

cooling means for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 39 The combination of claim 36, where said at least one other element is an element chosen to result in the presence of both Cu²⁺ and Cu³⁺ ions in said composition.

CLAIM 324 A combination according to anyone of claims 91, 92 or 36 to 39, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/1

CLAIM 325/1 recites:

CLAIM 1 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole

1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 325/2

CLAIM 325/2 recites:

CLAIM 1 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 2 The superconducting apparatus of claim 1, further including an alkaline earth element substituted for at least one atom of said rare earth or rare earth-like element in said composition.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that

come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/3

CLAIM 325/3 recites:

CLAIM 1 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 2 The superconducting apparatus of claim 1, further including an alkaline earth element substituted for at least one atom of said rare earth or rare earth-like element in said composition.

CLAIM 3 The superconducting apparatus of claim 2, where said transition metal is Cu.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/4

CLAIM 325/4 recites:

CLAIM 1 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 2 The superconducting apparatus of claim 1, further including an alkaline earth element substituted for at least one atom of said rare earth or rare earth-like element in said composition.

CLAIM 3 The superconducting apparatus of claim 2, where said transition metal is Cu.

CLAIM 4 The superconducting apparatus of claim 3, where said alkaline earth element is selected from the group consisting of B, Ca, Ba, and Sr.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-

366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/5

CLAIM 325/5 recites:

CLAIM 1 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 5 The superconducting apparatus of claim 1, where said transition metal element is selected from the group consisting of Cu, Ni, and Cr.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has

expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/6

CLAIM 325/6 recites:

CLAIM 1 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 2 The superconducting apparatus of claim 1, further including an alkaline earth element substituted for at least one atom of said rare earth or rare earth-like element in said composition.

CLAIM 6 The superconducting apparatus of claim 2, where said rare earth or rare earth-like element is selected from the group consisting of La, Nd, and Ce.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/7

CLAIM 325/7 recites:

CLAIM 1 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 7 The superconducting apparatus of claim 1, where said phase is crystalline with a perovskite-like structure.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/8

CLAIM 325/8 recites:

CLAIM 1 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 2 The superconducting apparatus of claim 1, further including an alkaline earth element substituted for at least one atom of said rare earth or rare earth-like element in said composition.

CLAIM 8 The superconducting apparatus of claim 2, where said phase is crystalline with a perovskite-like structure.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/9

CLAIM 325/9 recites:

CLAIM 1 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 9 The superconducting apparatus of claim 1, where said phase exhibits a layer-like crystalline structure.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, News and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/10

CLAIM 325/10 recites:

CLAIM 1 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 10 The superconducting apparatus of claim 1, where said phase is a mixed copper oxide phase.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/11

CLAIM 325/11 recites:

CLAIM 1 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and a current source for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 11 The superconducting apparatus of claim 1, where said composition is comprised of mixed oxides with alkaline earth doping.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has

expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/33

CLAIM 325/33 recites:

CLAIM 33 A superconducting apparatus comprising a composition having a superconducting onset temperature greater than or equal to 26°K, the composition being comprised of a copper oxide doped with an alkaline earth element where the concentration of said alkaline earth element is near to the concentration of said alkaline earth element where the superconducting copper oxide phase in said composition undergoes an orthorhombic to tetragonal structural phase transition.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement

Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 325/34

CLAIM 325/34 recites:

CLAIM 34 A superconducting apparatus having a superconducting onset temperature greater than or equal to 26°K, the composition being comprised of a mixed copper oxide doped with an element chosen to result in Cu³⁺ ions in said composition and a current source for passing a superconducting current through said superconducting composition.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in

view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 325/35

CLAIM 325/35 recites:

CLAIM 34 A superconducting apparatus having a superconducting onset temperature greater than or equal to 26°K, the composition being comprised of a mixed copper oxide doped with an element chosen to result in Cu³⁺ ions in said composition and a current source for passing a superconducting current through said superconducting composition.

CLAIM 35 The superconducting apparatus of claim 34, where said doping element includes an alkaline earth element.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole

1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 325/66

CLAIM 325/66 recites:

CLAIM 66 An apparatus comprising a superconductive composition having a transition temperature greater than or equal to 26°K, the composition including a multivalent transition metal oxide and at least one additional element, said composition having a distorted orthorhombic crystalline structure, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature and at a temperature greater than or equal to 26°K.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe,

Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 325/67

CLAIM 325/67 recites:

CLAIM 66 An apparatus comprising a superconductive composition having a transition temperature greater than or equal to 26°K, the composition including a multivalent transition metal oxide and at least one additional element, said composition having a distorted orthorhombic crystalline structure, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature and at a temperature greater than or equal to 26°K.

CLAIM 67 The apparatus of claim 66, where said transition metal oxide is a mixed copper oxide.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the

Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/68

CLAIM 325/68 recites:

CLAIM 66 An apparatus comprising a superconductive composition having a transition temperature greater than or equal to 26°K, the composition including a multivalent transition metal oxide and at least one additional element, said composition having a distorted orthorhombic crystalline structure, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature and at a temperature greater than or equal to 26°K.

CLAIM 67 The apparatus of claim 66, where said transition metal oxide is a mixed copper oxide.

CLAIM 68 The apparatus of claim 67, where said one additional element is an alkaline earth element.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has

expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/109

CLAIM 325/1096 recites:

CLAIM 109 A superconductive apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole

1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 325/130

CLAIM 325/130 recites:

CLAIM 130 A superconductive apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or Group III B element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, means for maintaining said composition at said temperature to exhibit said superconductivity and a means for passing an electrical superconducting current through said composition which exhibiting said superconductivity.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole

1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 325/361

CLAIM 325/361 recites:

CLAIM 361 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or an element comprising a rare earth characteristic, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole

1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 325/362

CLAIM 325/362 recites:

CLAIM 361 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or an element comprising a rare earth characteristic, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 362 The superconducting apparatus of claim 361, further including an alkaline earth element substituted for at least one atom of said rare earth or element comprising a rare earth characteristic in said composition.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68,109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that

come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/363

CLAIM 325/363 recites:

CLAIM 361 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or an element comprising a rare earth characteristic, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 362 The superconducting apparatus of claim 361, further including an alkaline earth element substituted for at least one atom of said rare earth or element comprising a rare earth characteristic in said composition.

CLAIM 363 The superconducting apparatus of claim 362, where said rare earth or element comprising a rare earth characteristic is selected from the group consisting of La, Nd, and Ce.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/364

CLAIM 325/364 recites:

CLAIM 361 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or an element comprising a rare earth characteristic, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 364 The superconducting apparatus of claim 361, where said phase is crystalline with a structure comprising a perovskite characteristic.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has

expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/365

CLAIM 325/365 recites:

CLAIM 361 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or an element comprising a rare earth characteristic, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 362 The superconducting apparatus of claim 361, further including an alkaline earth element substituted for at least one atom of said rare earth or element comprising a rare earth characteristic in said composition.

CLAIM 365 The superconducting apparatus of claim 362, where said phase is crystalline with a structure comprising a perovskite characteristic.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/366

CLAIM 325/366 recites:

CLAIM 361 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or an element comprising a rare earth characteristic, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 366 The superconducting apparatus of claim 361, where said phase exhibits a crystalline structure comprising a layered characteristic.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has

expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 325/370

CLAIM 325/370 recites:

CLAIM 27 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, said composition being a substituted Cu-oxide including a superconducting phase having a structure which is structurally substantially similar to the orthorhombic-tetragonal phase of said composition, means for maintaining said composition at a temperature greater than or equal to said transition temperature to put said composition in a superconducting state; and means for passing current through said composition while in said superconducting state.

CLAIM 31 The superconducting apparatus of claim 27, where said composition has a crystalline structure which enhances electron-phonon interactions to produce superconductivity at a temperature greater than or equal to 26°K.

CLAIM 370 The superconducting apparatus of claim 31, where said crystalline structure comprises a layered characteristic, enhancing the number of Jahn-Teller polarons in said composite.

CLAIM 325 A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68, 109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 326/93

CLAIM 326/93 recites:

CLAIM 93 An apparatus, comprising:

a mixed copper oxide material exhibiting an onset of superconductivity at an onset temperature greater than or equal to 26°K, and

a current source for producing an electrical current through said copper oxide material while it is in a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 326 An apparatus according to anyone of claims 93 to 95 or 138, wherein said mixed copper oxide can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner

has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 326/94

CLAIM 326/94 recites:

CLAIM 93 An apparatus, comprising:

a mixed copper oxide material exhibiting an onset of superconductivity at an onset temperature greater than or equal to 26°K, and

a current source for producing an electrical current through said copper oxide material while it is in a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 94 The apparatus of claim 93, where said copper oxide material exhibits a layer-like crystalline structure.

CLAIM 326 An apparatus according to anyone of claims 93 to 95 or 138, wherein said mixed copper oxide can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole

1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 326/95

CLAIM 326/95 recites:

CLAIM 93 An apparatus, comprising:

a mixed copper oxide material exhibiting an onset of superconductivity at an onset temperature greater than or equal to 26°K, and

a current source for producing an electrical current through said copper oxide material while it is in a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 95 The apparatus of claim 93, where said copper oxide material exhibits a mixed valence state.

CLAIM 326 An apparatus according to anyone of claims 93 to 95 or 138, wherein said mixed copper oxide can be made according to known principles of ceramic science.

This claim should be allowed since claim 138 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim

without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 326/138

CLAIM 326/138 recites:

CLAIM 93 An apparatus, comprising:

a mixed copper oxide material exhibiting an onset of superconductivity at an onset temperature greater than or equal to 26°K, and

a current source for producing an electrical current through said copper oxide material while it is in a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 138 The apparatus of claim 93, where said copper oxide material exhibits a substantially layered crystalline structure.

CLAIM 326 An apparatus according to anyone of claims 93 to 95 or 138, wherein said mixed copper oxide can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 327/64

CLAIM 327/64 recites:

CLAIM 64 A combination, comprising:

a mixed copper oxide composition having enhanced polaron formation, said composition including an element causing said copper to have a mixed valent state in said composition, said composition further having a distorted octahedral oxygen environment leading to a T_c greater than or equal to 26°K,

means for providing a superconducting current through said composition at temperatures greater than or equal to 26°K and less than said T_c , and

means for cooling said composition to a temperature greater than or equal to 26°K and less than said T_c .

CLAIM 327 A combination according to anyone of claims 64 or 135, wherein said mixed copper oxide can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 327/135

CLAIM 327/135 recites:

CLAIM 135 A combination, comprising:

a mixed copper oxide composition including an alkaline earth element (AE) and a rare earth or Group III B element (RE), said composition having a substantially layered crystalline structure and multi-valent oxidation states, said composition exhibiting a substantially zero resistance to the flow of electrical current therethrough when in a superconducting state at a temperature greater than or equal to 26°K, said mixed copper oxide having a superconducting onset temperature greater than or equal to 26°K and,

a current source for passing an electrical superconducting current through said composition when said composition exhibits substantially zero resistance at a temperature greater than or equal to 26°K and less than said onset temperature.

CLAIM 327 A combination according to anyone of claims 64 or 135, wherein said mixed copper oxide can be made according to known principles of ceramic science.

This claim should be allowed since claim 135 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner

has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/48

CLAIM 328/48 recites:

CLAIM 48 A superconductive apparatus comprising a superconductive composition comprised of a transition metal oxide having substitutions therein, the amount of said substitutions being sufficient to produce sufficient electron-phonon interactions in said composition that said composition exhibits a superconducting onset at temperatures greater than or equal to 26°K, and a source of current for passing a superconducting electric current through said superconductor.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe,

Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

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CLAIM 328/49

CLAIM 328/49 recites:

CLAIM 48 A superconductive apparatus comprising a superconductive composition comprised of a transition metal oxide having substitutions therein, the amount of said substitutions being sufficient to produce sufficient electron-phonon interactions in said composition that said composition exhibits a superconducting onset at temperatures greater than or equal to 26°K, and a source of current for passing a superconducting electric current through said superconductor.

CLAIM 49 The superconductive apparatus of claim 48, where said transition metal oxide is multivalent in said composition.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim

without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/50

CLAIM 328/50 recites:

CLAIM 48 A superconductive apparatus comprising a superconductive composition comprised of a transition metal oxide having substitutions therein, the amount of said substitutions being sufficient to produce sufficient electron-phonon interactions in said composition that said composition exhibits a superconducting onset at temperatures greater than or equal to 26°K, and a source of current for passing a superconducting electric current through said superconductor.

CLAIM 50 The superconductive apparatus of claim 48, where said transition metal is Cu.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the

Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/51

CLAIM 328/51 recites:

CLAIM 48 A superconductive apparatus comprising a superconductive composition comprised of a transition metal oxide having substitutions therein, the amount of said substitutions being sufficient to produce sufficient electron-phonon interactions in said composition that said composition exhibits a superconducting onset at temperatures greater than or equal to 26°K, and a source of current for passing a superconducting electric current through said superconductor.

CLAIM 51 The superconductive apparatus of claim 48, where said substitutions include an alkaline earth element.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the

Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/52

CLAIM 328/52 recites:

CLAIM 48 A superconductive apparatus comprising a superconductive composition comprised of a transition metal oxide having substitutions therein, the amount of said substitutions being sufficient to produce sufficient electron-phonon interactions in said composition that said composition exhibits a superconducting onset at temperatures greater than or equal to 26°K, and a source of current for passing a superconducting electric current through said superconductor.

CLAIM 52 The superconductive apparatus of claim 48, where said substitutions include a rare earth or rare earth-like element.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim

without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/96

CLAIM 328/96 recites:

CLAIM 96 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on

Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/97

CLAIM 328/97 recites:

CLAIM 96 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 97 The superconductive apparatus according to claim 96 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or rare-earth-like element and at least one alkaline-earth element.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383

or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 97 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/98

CLAIM 328/98 recites:

CLAIM 96 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 97 The superconductive apparatus according to claim 96 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or rare-earth-like element and at least one alkaline-earth element.

CLAIM 98 The superconductive apparatus according to claim 97 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 98 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts

them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 328/99

CLAIM 328/99 recites:

CLAIM 96 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 97 The superconductive apparatus according to claim 96 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or rare-earth-like element and at least one alkaline-earth element.

CLAIM 99 The superconductive apparatus according to claim 97 in which the alkaline-earth element is barium.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 99 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts

them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 328/100

CLAIM 328/100 recites:

CLAIM 96 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 100 The superconductive apparatus according to claim 96 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/101

CLAIM 328/101 recites:

CLAIM 96 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 100 The superconductive apparatus according to claim 96 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 101 The superconductive apparatus according to claim 100 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/102

CLAIM 328/102 recites:

CLAIM 96 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 100 The superconductive apparatus according to claim 96 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 101 The superconductive apparatus according to claim 100 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 102 The superconductive apparatus according to claim 101 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts

them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 328/103

CLAIM 328/103 recites:

CLAIM 103 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_q=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_q=0$ of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383

or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 103 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/104

CLAIM 328/104 recites:

CLAIM 103 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_q=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_q=0$ of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

CLAIM 104 The superconductive apparatus according to claim 103 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 104 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause

them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 328/105

CLAIM 328/105 recites:

CLAIM 103 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_q=0$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_q=0$ of the superconductive composition; and

(c) a current source for causing an electric current to flow in the superconductor element.

CLAIM 105 The superconductive apparatus according to claim 103 in which the alkaline-earth element is barium.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 105 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts

them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 328/106

CLAIM 328/106 recites:

CLAIM 103 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_q=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_q=0$ of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

CLAIM 106 The superconductive apparatus according to claim 103 in which the copper-oxide compound of the

superconductive composition includes mixed valent copper ions.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 106 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example,

become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 328/107

CLAIM 328/107 recites:

CLAIM 103 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_q=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_q=0$ of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

CLAIM 106 The superconductive apparatus according to claim 103 in which the copper-oxide compound of the

superconductive composition includes mixed valent copper ions.

CLAIM 107 The superconductive apparatus according to claim 106 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 107 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 328/108

CLAIM 328/108 recites:

CLAIM 103 A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_q=0$, the transition-onset temperature T_c being greater than or equal to 26°K;
- (b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_q=0$ of the superconductive composition; and
- (c) a current source for causing an electric current to flow in the superconductor element.

CLAIM 106 The superconductive apparatus according to claim 103 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 107 The superconductive apparatus according to claim 106 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 108 The superconductive apparatus according to claim 107 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 108 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement

Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states “ Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 328/198

CLAIM 328/198 recites:

CLAIM 198 A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/199

CLAIM 328/199 recites:

CLAIM 198 A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 199 The superconductive apparatus according to claim 198 in which the copper-oxide compound of the superconductive composition includes at least one element selected from the group consisting of a rare-earth element, a Group III B element and an alkaline-earth element.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383

or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/200

CLAIM 328/200 recites:

CLAIM 198 A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 199 The superconductive apparatus according to claim 198 in which the copper-oxide compound of the superconductive composition includes at least one element selected from the group consisting of a rare-earth element, a Group III B element and an alkaline-earth element.

CLAIM 200 The superconductive apparatus according to claim 199 in which the rare-earth is lanthanum.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts

them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 328/201

CLAIM 328/201 recites:

CLAIM 198 A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 199 The superconductive apparatus according to claim 198 in which the copper-oxide compound of the superconductive composition includes at least one element selected from the group consisting of a rare-earth element, a Group III B element and an alkaline-earth element.

CLAIM 201 The superconductive apparatus according to claim 199 in which the alkaline-earth element is barium.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/202

CLAIM 328/202 recites:

CLAIM 198 A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) a current source causing an electric current to flow in the superconductor element.

CLAIM 202 The superconductive apparatus according to claim 198 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383

or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/203

CLAIM 328/203 recites:

CLAIM 198 A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 202 The superconductive apparatus according to claim 198 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 203 The superconductive apparatus according to claim 202 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/204

CLAIM 328/204 recites:

CLAIM 198 A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 202 The superconductive apparatus according to claim 198 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 203 The superconductive apparatus according to claim 202 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 204 The superconductive apparatus according to claim 203 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause

them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior.” Applicants discovered that ceramic materials are superconductors.

CLAIM 328/371

CLAIM 328/371 recites:

CLAIM 48 A superconductive apparatus comprising a superconductive composition comprised of a transition metal oxide having substitutions therein, the amount of said substitutions being sufficient to produce sufficient electron-phonon interactions in said composition that said composition exhibits a superconducting onset at temperatures greater than or equal to 26°K, and a source of current for passing a superconducting electric current through said superconductor.

CLAIM 371 The superconductive apparatus of claim 48, where said substitutions include a rare earth or an element comprising a rare earth characteristic.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that

persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/383

CLAIM 328/383 recites:

CLAIM 383 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a crystal structure comprising a perovskite characteristic and a layered characteristic, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) means controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) means for causing an electric current to flow in the superconductor element.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 328/384

CLAIM 328/384 recites:

CLAIM 383 A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

- (a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a crystal structure comprising a perovskite characteristic and a layered characteristic, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;
- (b) means controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and
- (c) means for causing an electric current to flow in the superconductor element.

CLAIM 384 The superconductive apparatus according to claim 383 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or element comprising a rare earth characteristic and at least one alkaline-earth element.

CLAIM 328 A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383

or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

This claim should be allowed since claim 384 is allowed.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/12

CLAIM 329/12 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the

Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/13

CLAIM 329/13 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 13 The combination of claim 12, where said superconductive composition includes a transition metal oxide.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that

come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/14

CLAIM 329/14 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 14 The combination of claim 12, where said superconductive composition includes Cu-oxide.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has

expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/15

CLAIM 329/15 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 15 The combination of claim 12, where said superconductive composition includes a multivalent transition metal, oxygen, and at least one additional element.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that

come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/16

CLAIM 329/16 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 15 The combination of claim 12, where said superconductive composition includes a multivalent transition metal, oxygen, and at least one additional element.

CLAIM 16 The combination of claim 15, where said transition metal is Cu.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/17

CLAIM 329/17 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 15 The combination of claim 12, where said superconductive composition includes a multivalent transition metal, oxygen, and at least one additional element.

CLAIM 17 The combination of claim 15, where said additional element is a rare earth or rare earth-like element.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/18

CLAIM 329/18 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 15 The combination of claim 12, where said superconductive composition includes a multivalent transition metal, oxygen, and at least one additional element.

CLAIM 18 The combination of claim 15, where said additional element is an alkaline earth element.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/19

CLAIM 329/19 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 19 The combination of claim 12, where said composition includes a perovskite-like superconducting phase.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that

come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/20

CLAIM 329/20 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 20 The combination of claim 12, where said composition includes a substituted transition metal oxide.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has

expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/21

CLAIM 329/21 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 20 The combination of claim 12, where said composition includes a substituted transition metal oxide.

CLAIM 21 The combination of claim 20, where said substituted transition metal oxide includes a multivalent transition metal element.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/22

CLAIM 329/22 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 20 The combination of claim 12, where said composition includes a substituted transition metal oxide.

CLAIM 22 The combination of claim 20, where said substituted transition metal oxide is an oxide of copper.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner

has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/23

CLAIM 329/23 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 20 The combination of claim 12, where said composition includes a substituted transition metal oxide.

CLAIM 23 The combination of claim 20, where said substituted transition metal oxide has a layer-like structure.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner

has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/110

CLAIM 329/110 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 15 The combination of claim 12, where said superconductive composition includes a multivalent transition metal, oxygen, and at least one additional element.

CLAIM 110 The combination of claim 15, where said additional element is rare earth or alkaline earth element.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/131

CLAIM 329/131 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 15 The combination of claim 12, where said superconductive composition includes a multivalent transition metal, oxygen, and at least one additional element.

CLAIM 131 The combination of claim 15, where said additional element is a rare earth or Group III B element.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/132

CLAIM 329/132 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 132 The combination of claim 12, where said composition includes a substantially perovskite superconducting phase.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that

come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/367

CLAIM 329/367 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 15 The combination of claim 12, where said superconductive composition includes a multivalent transition metal, oxygen, and at least one additional element.

CLAIM 367 The combination of claim 15, where said additional element is a rare earth or an element comprising a rare earth characteristic.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/368

CLAIM 329/368 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 368 The combination of claim 12, where said composition includes a superconducting phase comprising a perovskite characteristic.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that

come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/369

CLAIM 329/369 recites:

CLAIM 12 A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

A current source for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

a temperature controller for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 20 The combination of claim 12, where said composition includes a substituted transition metal oxide.

CLAIM 369 The combination of claim 20, where said substituted transition metal oxide has a structure comprising a layered characteristic.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has

given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.

CLAIM 329/370

CLAIM 329/370 recites:

CLAIM 27 A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, said composition being a substituted Cu-oxide including a superconducting phase having a structure which is structurally substantially similar to the orthorhombic-tetragonal phase of said composition, means for maintaining said composition at a temperature greater than or equal to said transition temperature to put said composition in a superconducting state; and means for passing current through said composition while in said superconducting state.

CLAIM 31 The superconducting apparatus of claim 27, where said composition has a crystalline structure which enhances electron-phonon interactions to produce superconductivity at a temperature greater than or equal to 26°K.

CLAIM 370 The superconducting apparatus of claim 31, where said crystalline structure comprises a layered characteristic, enhancing the number of Jahn-Teller polarons in said composite.

CLAIM 329 A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370,

wherein said superconductive composition can be made according to known principles of ceramic science.

The Examiner has not made as to this claim a prima facie case of lack of enablement for the reasons given in all volumes of this Brief. The Examiner has given no specific reasons for rejecting this claim as not enabled. The Examiner has not shown why a person of ordinary skill in the art cannot, based on Applicants' teaching, determine without undue experimentation, species that come within the scope of this claim other than those that the Examiner has expressly stated are enabled. Applicants have shown extensive evidence that persons of skill in the art can determine species within the scope of this claim without undue experimentation. Examples of Applicants' evidence are: the Examiner's First, Second, Third and Fourth Enablement Statements, the Poole 1988, 1995 and 1996 Enablement Statements, the Schuller Enablement Statement and Applicants' Affidavits of Mitzi, Dinger, Tsuei, Shaw, Duncombe, Newns and Bednorz in Brief Attachments AH to AR. In particular the Examiner has given no reason for why this claim is not enabled by Applicants' teaching in view of the underlined limitation of the claim which includes specific limitations on the scope of this claim.

The sentenced bridging page 1 and 2 of the specification states " Generally, superconductivity is considered to be a property of the metallic state of a material since all known superconductors are metallic under the conditions that cause them to be superconducting. A few normally non-metallic materials, for example, become superconducting under very high pressure wherein the pressure converts them to metals before they exhibit superconducting behavior." Applicants discovered that ceramic materials are superconductors.